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Review Article

Effective of Oxymetholone Drug Activity on Some Blood Parameters in Male Albino Rats

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Abstract

The objective of present study was to evaluated the effect of Oxymetholone drug on sperm parameters and sex hormone in adult male rats. Twenty male rats sexually mature were randomly divided into two groups; Each group has 10 rats. The treated group administered orally with Oxymethololne drug 5 mg/g body weight/ day of for 60 days while the control group administered orally normal saline per day. SPSS analysis of data generated with P< 0.05 considered statistically significant. The results showed a significant increase (p <0.05) in the hematocrit, hemoglobin in treated group compared to control. While significant decrease (p <0.05) in white blood cell of the treated group compared to the control. The administration of Oxymethylene induces blood parameters.

Introduction

Anabolic androgenic steroids (AAS) are among the most important compounds used in the medical field as well as used illegally by young athletes and non-athletes who use this stimulant to increase muscle mass and improve their functional performance [1] and AAS are synthetic derivatives of male sexual hormone testosterone and are small molecules that can spread negatively in various body tissues [2]. The first effect is the anabolic effect or muscle building, which is an increase in protein synthesis, which leads to muscle growth and an increase in its size, while the second effect is the effect of ender, genetic or masculinity stimulant, including sperm production, roughness of the voice and frequent hair appearance; Although his pharmaceutical industry mainly possesses low-end and genetic effects called anabolic steroids, both effects are inseparable [3]. Oxymethlone is a synthetic anabolic steroid that is structurally associated with male testosterone [4, 5] Uses Oxymethlone and other synthetic androgens to treat a variety of conditions, including hypogonadism and delayed puberty; androgens are also used to correct vascular edema, manage breast cancer, promote a positive balance of nitrogen after injury or surgery, and stimulate red blood cell production; athlete athletes consume large amounts of androgens in an effort to improve athletic performance [5].

Materials and Methods

Source of drug

Oxymetholone was obtained in a dose (50mg) from a gym in Baghdad governorate. This dose is for humans and it is in pill form. Adult white male rats were used in this study using the concentration (5mg / kg)

Animal

Three-month-old mature and healthy adult male rats weights ranging from (190-220 g) were procured from animal house of Faculty of Education for Girls- University of Kufa. They were maintained under controlled light schedule (12h Light:12h Dark) at room temperature (28oC) and with constant humidity (40 -50%). The animal acclimatized for a period of 7 days before the start of treatment. During this period, they were fed with standard rat chows/pellets and water.

Experimental Trial Design Procedure

The treatment group which included (10) adult male rats, as these animals were administrated orally with oxymetholone at a dose (5mg/kg) and by (1ml) for (60) days. The control group, which included (10) adult male rats, as these animals were administrated with normal saline (1ml) for 60 day.

Animal Sacrifice

Weights were recorded for all animals and then the animals were drugged by injecting them with the mixture of Xyline and ketamine, by taking (0.5ml) of ketamine and (0.1ml) of Xyline per (250g) of body weight. A T-shaped hole was made in the abdominal cavity and then blood samples were drawn from the heart directly by heart stab to obtain a blood sample of (2-5ml).

Statistical Analysis

The statistics of the results were analyzed using the SPSS statistical system for the purpose of comparing control and transaction totals using the t test.

Results

The result of the current study indicated a significant increase (p<0.01(in the rats of hematocrit (HCT) and hemoglobin (HGB) when compared to the control group as well as, a significant increase (p<0.05) in the rats of red blood cell (RBC) when compared to the control group.

While the treating group administered orally with Oxymetholone drug (5 mg/kg) for two consecutive months lead to a significant decrease (p<0.01) in the white blood cell rate when compared to the group that was not administered with Oxymehtolone.

Table 1. The obtained data showed that the blood parameters

Blood parameters	Treatment group M ±SD	Control group M ±SD
WBC (103/mm)	**4.8** ± 0.7	**7.14** ± 2.2
RBC (106/L)	**7.5** ± 0.4	**6.2** ± 0.3
HGB (Mg/dl)	**15.1** ± 1.1	**12.6** ± 0.6
HCT	**43.5** ± 3	**37** ± 1.8

Table No. (1) shows the increase in blood parameters for the comparison group

Five rats per group

Significant difference * p <0.05

Discussion

The result of the current study showed that the dose of Oxymetholone (5mg/kg) by body weight had a clear effect on the HCT and HGB value after the end of the administration period of 8 weeks compared to control group, and these results are consistent. with the study of [6-9].

The study showed an increase in RBC and this is consistent with [6-9].

This may be attributed to an increase in the protein to an increase in the muscle content of the body as a result of increase content of the body, which lead to an increase in RBC due to an increase in HCT and HGB [10, 11].

The reason may also be due to the fact that anabolic androgens increase nitrogen retention, which in turn stimulates the process of blood formation (erythropoiesis). It also supports calcium absorption by the skeleton [12].

It may be attributed anabolic androgen stimulate the process of erythropoiesis through an increase in the secretion of endogenous hormone erythropoietin [13, 14].

It has been shown that Oxymetholone increase levels of hormone erythropoietin five [15]. Elevated levels of erythropoietin have been found in the urine of patients suffering from hypogonadism and anemia after taking anabolic androgen [16, 17].

This may be due to the fact that anabolic androgens enhance the process of blood formation by stimulating red blood cell stem cells [18].

Several studies have also shown that anabolic androgens increase reticulocyte count, HGB concentration and RBC activity in the bone marrow [19, 20].

Oxymetholone has been approved by the US Food and Drug Administration (FDA) to treat anemia caused by a deficiency in the production of red blood cell s, in addition to myelitis and dysplastic anemia [12].

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